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Segmenting Fishing Markets Using Motivations

Using data collected from the 2004 Louisiana Red River Fishing Survey, this research examined respondents' answers to nineteen statements regarding the reasons why people fish to discern patterns in individuals' preferences, and to classify groups exhibiting common patterns of responses. These statements were condensed into four dimensions using the principal components analysis. Empirical results based on the K-means cluster analysis identified three groups of respondents. Statistical tests were conducted to identify significant differences among the clusters. Results of this study provide insight into the understanding of fishing motivations and determinants among angler groups for fishing tourism planning and management purposes.

Key words: fishing tourism, fishing motivation, market segmentation, multivarite analysis, Louisiana fishing survey

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Introduction

Recreational fishing has been receiving much publicity as an economic development strategy for local communities (Ditton, et al., 2002). With abundant fisheries resources and habitats, fishing tourism, as a new form of wildlife-based tourism, is an important component of Louisiana's wildlife-based traditions. In 2001, 970 thousand Louisiana residents (78%) and nonresidents (22%) 16 years old and older fished, and incurred $703 million of fishing expenses in Louisiana (U.S. Fish and Wildlife Service, 2002).

Fishing tourism has been widely promoted and developed (Ditton, et al., 2002). It will be increasingly important, especially in Louisiana, to consider the social, economic, and environmental impacts of this wildlife-based tourism sector. Fishing tourism is promoted as a sustainable development strategy for local communities to generate revenues from fisheries resources and habitats. Demand for this wildlife-based tourism arises from shifting consumptive activities to non-consumptive concern or interest in natural environments and a growing desire to travel to new and exotic places (Zwirn, et al., 2005).

The amount of revenue that remains within local economies is an important factor in fishing tourism development. Increasing the number of participants at a fishing destination can maximize these benefits if fishing is approached from a tourism standpoint. As a result, a focused marketing study is necessary if there is a desire to fine-tune marketing messages and direct them through appropriate channels to specific segments of (*who/what?)* the fishing tourism market.

Understanding what motivates people to participate in angling could give managers insight regarding the needs and interests of their different user groups. It is difficult to attract diverse angler markets with different motivations and interests, especially in the State of

Louisiana, when information regarding the reasons or motives for angling among different angler segments is lacking. The objectives of this study are to understand fishing motivations of anglers who fished in Louisiana's Red River area and to identify groups of anglers' who exhibit common patterns of responses.

Methods

The data used in this study were extracted from the 2004 Louisiana Fishing Survey - The Red River (Kelso, et al., 2004). This survey was mailed to anglers in Louisiana parishes surrounding the Red River to elicit their participation, fishing preferences, preferred fishing locations, expenditures, and angler attitudes.

Respondents were asked to indicate why people fish in the Red River, using a scale that ranged from 1 (Not Important) through 5 (Extremely Important). This study examined the patterns of responses from the 640 anglers who provided complete responses for all nineteen statements. Descriptive statistics of fishing motivations of Red River anglers in this sample are shown in Table 1.

Table 1. Descriptive statistics of fishing motivations of Red River anglers

Motivation	Mean	S.D.
To be outdoors	4.34	0.80
For family recreation	3.92	1.13
To experience new and different things	3.39	1.23
For relaxation	4.41	0.86
To be close to the water	3.66	1.12
To get away from the demands of other people	4.02	1.20
For the experience of the catch	3.99	1.06
To test equipment	2.32	1.20
To be with friends	3.71	1.15
To experience unpolluted natural surroundings	4.04	1.05
To win a trophy or prize	1.69	1.18
To develop fishing skills	3.06	1.30
To get away from the regular routine	4.10	0.99
To obtain a very large fish	2.66	1.48

For the challenge of the sport	3.57	1.28
For the fun of catching fish	4.30	0.86
To experience adventure and excitement	3.78	1.11
Competition with other anglers	2.02	1.34
To catch a lot of fish	2.95	1.40

Responses to the nineteen items were factor analyzed using a principal components approach and a varimax rotation to delineate the underlying dimensions associated with fishing motivations. Next, a cluster analysis of respondents was conducted using the four identified factor scores. Using an SPSS K-means technique, three cluster groups were identified. Differences in selected socioeconomic characteristics among members of the identified clusters were then examined.

Results

The factor loadings and corresponding reliabilities (using Cronbach's alpha) of the four resulting factors are shown in Table 2. The internal consistency coefficient score of the nineteen fishing motivations showed Cronbach's alpha of 0.851 was acceptable. Each of those four factors had a satisfactory Cronbach's alpha of 0.784, 0.734, 0.746, and 0.710, respectively, which explained a cumulative 55% of the variance in statement response.

Table 2. Factor and reliability analysis of fishing motivations of Red River anglers

Motivation	Challenge	Experience	Skill	Relaxation
For the fun of catching fish	0.751			
For the experience of the catch	0.741			
To catch a lot of fish	0.693			
To obtain a very large fish	0.606			
For the challenge of the sport	0.532			
To experience adventure and excitement	0.493			
To experience new and different things		0.725		
For family recreation		0.724		
To be outdoors		0.571		
To be with friends		0.541		

To experience unpolluted natural surroundings		0.512		
To be close to the water		0.422		
To win a trophy or prize			0.842	
Competition with other anglers			0.818	
To develop fishing skills			0.533	
To test equipment			0.499	
To get away from the demands of other people				0.829
To get away from the regular routine				0.763
For relaxation				0.659
Eigenvalue	2.808	2.786	2.522	2.315
% of Variance	14.78	14.66	13.27	12.19
Cumulative %	14.78	29.44	42.71	54.90
Cronbach's Coefficient Alpha	0.784	0.734	0.746	0.710
Cronbach's Coefficient Alpha (Overall)		0.851		
K-M-O measure of Sampling Adequacy		0.859		
Bartlett's Test of Sphericity: Chi-Square = 3878.282; Degrees of Freedom = 171; Sig. = 0.000				

An initial interpretation of these four factors suggested that Factor 1 emphasized *Challenge*, comprised six motivations (structure coefficients ranging from 0.751 to 0.493) and explained 14.78% of the variance with an eigenvalue of 2.808. Factor 2 emphasized *Experience*, comprised six concerns (structure coefficients ranging from 0.725 to 0.422) and explained 14.66% of the variance with an eigenvalue of 2.786. Factor 3 emphasized *Skill*, comprised four concerns (structure coefficients ranging from 0.842 to 0.499) and explained 13.27% of the variance with an eigenvalue of 2.522. Factor 4 emphasized *Relaxation*, comprised three motivations (structure coefficients ranging from 0.829 to 0.659) and explained 12.19% of the variance with an eigenvalue of 2.315.

Cluster means for the four factor scores representing Red River anglers were identified based on the similarity of their motivations. Cluster 1, which comprised 36.6 percent of the Red River angler sample, was labeled *Leisure* anglers. The *Leisure* angler cluster showed a positive

mean factor score for *Experience*, but negative mean factor scores for *Challenge*, *Skill*, and *Relaxation*. Cluster 2, the largest group with 41.1 percent of the sample, was labeled *Sports* anglers. The *Sports* angler cluster had positive mean factor scores for *Challenge* and *Relaxation*, but negative mean factor scores for *Experience* and *Skill*. Cluster 3, named *Competitive* anglers, revealed positive mean factor scores for all factors. The *Competitive* angler cluster, containing 22.3 percent of the sample, was the smallest of the three clusters identified. Results of the cluster analysis were tested for accuracy using multiple discriminate analysis.

The survey questions pertaining to the respondent's fishing activity, Red River fishing trip expenditures, income, age, and gender allowed the analysis of selected characteristics of the angler clusters (Table 4). The average age for each cluster was in the early- to mid-forties. There were statistically significant differences in ages among the clusters ($F = 11.19$, $P < 0.0001$). The overwhelming majority of each cluster (81 to 85 percent) was male. Nevertheless, there were no statistically significant differences in gender composition ($\chi^2 = 1.416$; $P = 0.4927$) between the three clusters. Angler clusters demonstrated significant differences ($\chi^2 = 5.34$; $P = 0.050$) in household income.

Table 4. Descriptive Statistics of Red River anglers

Variable	Leisure (n=234)	Sports (n=263)	Competitive (n=143)
Household Income ($)	55,256	49,648	47,675
Age (Years)	46	42	41
Male (%)	82	81	85
Total Days of Fishing (Days)	40	46	62
Days of Fishing in Red River (Days)	17	18	22
Red River Trip Expenditures ($)	57	71	75

Angling avidity varied significantly among clusters ($F = 10.39$, $P < 0.001$). The average number of days of fishing in the Red River was not significantly different among the three angler

clusters (F = 1.64, P = 0.1952). The clusters also demonstrated significant differences for average fishing trip related expenditures (F = 2.39, P = 0.0921).

Discussion

This research suggests that the anglers' motivations may be important in distinguishing different segments within the angling population. *Leisure* anglers, in this case, were more likely than their counterparts in the *Sports* and *Competitive* angler clusters to view the social and experiential components of their fishing experience as very or extremely important. In contrast, they placed less importance on harvest rates, fish size, and other more traditional aspects of fisheries management. They were not as active as *Sports* and *Competitive* anglers; fishing less frequently and spending less money during a typical fishing trip in the Red River, the survey target area.

Competitive anglers were the most active of the three clusters, with more days of fishing overall and more days of angling in the Red River than other anglers. *Competitive* anglers typically spent more on a fishing trip than anglers in the other clusters. They also placed a higher importance on skill-oriented aspects of the fishing experience, such as winning a trophy, testing equipment, and development fishing skills.

The customary objectives of fisheries managers, fish size and populations, are not the primary attractants for all anglers. Indeed, *Leisure* anglers place a relatively low priority on catching fish. To appeal to this segment, managers should work to enhance the perceived environmental quality of fishing sites and to provide facilities that enhance the convenience and relaxation of the angling experience.

At the same time, the traditional fisheries management goals are justified by their importance to the *Sports* and *Competitive* angler clusters. Because their trip expenditures and

participation rates are higher than those of *Leisure* anglers, they are likely to make a higher economic contribution to the communities in which their angling activity takes place. To retain these important angler groups, managers should continue to pursue the traditional fisheries management goals that enhance catch success.

These results illustrate the diversity of anglers' motivations and belie the concept of an "average" angler. Fisheries managers in Louisiana's Red River and other locations should be aware of this diversity when considering fishing tourism management options as they strive to serve the angling public.

From a tourism promotion and marketing standpoint, the three groups of anglers differ markedly in terms of motivations, household income, age, total days of fishing, and Red River trip expenditures. Findings from this study also indicate that the primary motivations of all anglers are to relax and enjoy the outdoors. Overall, catching trophy fish and competing with other anglers are not the primary motivations for Leisure and Sports anglers. However, to *Competitive* anglers these are very important reasons for fishing.

Developing fisheries in natural settings, reducing crowding, and reducing user conflict will help the local tourism agencies provide fishing opportunities in which *Leisure* anglers can enjoy the outdoors and relax. Subgroups of anglers, such as *Sports* and *Competitive* anglers, do place a great deal of importance on the catch aspects of fishing. Recognition of those subgroups and providing the experiences that they desire should help improve angler satisfaction.

The primary limitation of this study was the low response rate came from the 2004 Louisiana Red River Fishing Survey, which increased the potential for bias in this study. Also, the empirical results of this study reflected only a cross section of 640 local resident anglers, and may not accurately depict composition of the whole angler market in the state of Louisiana.

Finally, assessing the characteristics and fishing behavior of nonresident anglers may provide more useful information understanding how they differ from resident anglers.

Acknowledgements

The author would like to thank Dr. William Kelso of the Louisiana State University School of Renewable Natural Resources and Mr. Tim Morrison, Mr. David Lavergne, Mr. Herb Holloway, and Dr. Jack Isaacs of the Louisiana Department of Wildlife and Fisheries for providing the data necessary and research assistance to accomplish this study. I am also grateful to the reviewers who commented on an initial draft of the paper.

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